LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Canceled)

2. (Currently Amended) A method ~~according to claim 1, further comprising~~ for controlling injection of a reducing agent upstream from a catalyst in an exhaust line from a combustion engine ,the method comprising:

calculating an accumulation actual value (A1) representative of a current accumulation in the catalyst of a reducing substance forming part of or formed by the reducing agent based on information from a computation model, wherein the model takes into account expected reactions in the catalyst under prevailing operating conditions, and the model continuously determines the current state of the catalyst,

calculating an accumulation setpoint value (A2) based on an emission setpoint value (E2) and information from the computation model, wherein the emission setpoint value (E2) is representative of a desired content, in exhaust gases leaving the catalyst, of an exhaust gas substance which, as the exhaust gases pass through the catalyst, is at least partly removed from the exhaust gases by the action of the reducing substance or formed by the action of the reducing substance, and the accumulation setpoint value (A2) is representative of the reducing substance accumulation required in the catalyst under prevailing operating conditions for substantially achieving the emission setpoint value (E2),

calculating a limitation factor ($f_{constrain}$), wherein the limitation factor has a value which depends on an estimate of the current risk that the reducing substance content of the exhaust gases leaving the catalyst might exceed a predetermined limit value, using the limitation factor in calculating the accumulation setpoint value (A2) in such a way that the accumulation setpoint value (A2) decreases in response to increasing risk that the reducing substance content of the exhaust gases leaving the catalyst might exceed the predetermined limit value

comparing the accumulation actual value (A1) with the accumulation setpoint value (A2), and

controlling the injection of reducing agent in the exhaust line based on the comparison between the accumulation actual value (A1) and the accumulation setpoint value (A2).

3. (Previously Presented) A method according to claim 2, further comprising using the limitation factor ($f_{constrain}$) as a multiplication factor in calculating the accumulation setpoint value (A2), wherein the limitation factor is given a value which varies between 0 and 1 depending on the current risk that the reducing substance content of the exhaust gases leaving the catalyst might exceed the predetermined limit value, and wherein the value of the limitation factor is close to 1 when there is no such risk and close to 0 when such risk is imminent.

4. (Currently Amended) A method according to claim [[1]]5, further comprising calculating an NOx conversion capacity of the catalyst under prevailing operating conditions based on from the computation model and taking the NOx conversion capacity into account in calculating the accumulation setpoint value (A2).

5. (Currently Amended) A method~~ according to claim 1, further comprising~~ for controlling injection of a reducing agent upstream from a catalyst in an exhaust line from a combustion engine ,the method comprising:

calculating an accumulation actual value (A1) representative of a current accumulation in the catalyst of a reducing substance forming part of or formed by the reducing agent based on information from a computation model, wherein the model takes into account expected reactions in the catalyst under prevailing operating conditions, and the model continuously determines the current state of the catalyst,

calculating an accumulation setpoint value (A2) based on an emission setpoint value (E2) and information from the computation model, wherein the emission setpoint value (E2) is representative of a desired content, in exhaust gases leaving the catalyst, of an exhaust gas substance which, as the exhaust gases pass through the catalyst, is at least

partly removed from the exhaust gases by the action of the reducing substance or formed by the action of the reducing substance, and the accumulation setpoint value (A2) is representative of the reducing substance accumulation required in the catalyst under prevailing operating conditions for substantially achieving the emission setpoint value (E2),

comparing the accumulation actual value (A1) with the accumulation setpoint value (A2) by supplying the accumulation actual value (A1) and the accumulation setpoint value (A2) to a first comparator, which emits a signal (S1) to a first regulator, wherein the signal (S1) depends on the conformity between the accumulation actual value (A1) and the accumulation setpoint value (A2),

controlling the injection of reducing agent in the exhaust line based on the comparison between the accumulation actual value (A1) and the accumulation setpoint value (A2) by ~~and~~ emitting a control signal (S2) from the first regulator based on the signal from the comparator for controlling the injection of reducing agent in the exhaust line based on the control signal (S2).

6. (Canceled)

7. (Currently Amended) A method according to claim 8[[6]], wherein the emission actual value (E1) is calculated by means of the computation model or on the basis of information from the computation model.

8. (Currently Amended) A method ~~according to claim 6, further comprising~~ for controlling injection of a reducing agent upstream from a catalyst in an exhaust line from a combustion engine ,the method comprising:

calculating an accumulation actual value (A1) representative of a current accumulation in the catalyst of a reducing substance forming part of or formed by the reducing agent based on information from a computation model, wherein the model takes into account expected reactions in the catalyst under prevailing operating conditions, and the model continuously determines the current state of the catalyst,

calculating an accumulation setpoint value (A2) based on an emission setpoint value (E2) and information from the computation model, wherein the emission setpoint value (E2) is representative of a desired content, in exhaust gases leaving the catalyst, of an exhaust gas substance which, as the exhaust gases pass through the catalyst, is at least partly removed from the exhaust gases by the action of the reducing substance or formed by the action of the reducing substance, and the accumulation setpoint value (A2) is representative of the reducing substance accumulation required in the catalyst under prevailing operating conditions for substantially achieving the emission setpoint value (E2),

comparing the accumulation actual value (A1) with the accumulation setpoint value (A2), and

controlling the injection of reducing agent in the exhaust line based on the comparison between the accumulation actual value (A1) and the accumulation setpoint value (A2)

determining an emission actual value (E1) by calculation or measurement, wherein the emission actual value (E1) is representative of the current content of the exhaust gas substance in the exhaust gases leaving the catalyst,

comparing the emission actual value (E1) with the emission setpoint value (E2),

supplying the emission actual value (E1) and the emission setpoint value (E2) to a second comparator which emits a regulator signal (S3) to a second regulator, wherein the regulator signal (S3) depends on the conformity between the emission actual value (E1) and the emission setpoint value (E2), and emitting a control signal (f_{SP}) from the second regulator based on the signal from the second comparator, wherein the control signal (f_{SP}) affects [[the]] a calculation of the accumulation setpoint value (A2) and calculating the accumulation setpoint value (A2) on information from the computation model and the conformity between the emission actual value (E1) and the emission setpoint value (E2),.

9. (Currently Amended) A method ~~according to claim 6, further comprising~~ for controlling injection of a reducing agent upstream from a catalyst in an exhaust line from a combustion engine ,the method comprising:

calculating an accumulation actual value (A1) representative of a current accumulation in the catalyst of a reducing substance forming part of or formed by the reducing agent based on information from a computation model, wherein the model takes into account expected reactions in the catalyst under prevailing operating conditions, and the model continuously determines the current state of the catalyst,

calculating an accumulation setpoint value (A2) based on an emission setpoint value (E2) and information from the computation model, wherein the emission setpoint value (E2) is representative of a desired content, in exhaust gases leaving the catalyst, of an exhaust gas substance which, as the exhaust gases pass through the catalyst, is at least partly removed from the exhaust gases by the action of the reducing substance or formed by the action of the reducing substance, and the accumulation setpoint value (A2) is representative of the reducing substance accumulation required in the catalyst under prevailing operating conditions for substantially achieving the emission setpoint value (E2), obtaining the accumulation setpoint value (A2) by multiplying a first multiplication factor in the form of a calculated accumulation maximum value (A_{max}) which is representative of the maximum permissible reducing substance accumulation in the catalyst under prevailing operating conditions, with a second multiplication factor which depends on the conformity between the emission actual value (E1) and the emission setpoint value (E2)

comparing the accumulation actual value (A1) with the accumulation setpoint value (A2), and

controlling the injection of reducing agent in the exhaust line based on the comparison between the accumulation actual value (A1) and the accumulation setpoint value (A2)

determining an emission actual value (E1) by calculation or measurement, wherein the emission actual value (E1) is representative of the current content of the exhaust gas substance in the exhaust gases leaving the catalyst,

comparing the emission actual value (E1) with the emission setpoint value (E2), and

calculating the accumulation setpoint value (A2) on information from the computation model and the conformity between the emission actual value (E1) and the emission setpoint value (E2).

10. (Currently Amended) A method according to claim 5[[1]], wherein according to the computation model, the catalyst is divided in its longitudinal direction into a multiplicity of segments, and wherein the accumulation actual value (A1) and the accumulation setpoint value (A2) refer respectively to current and required reducing substance accumulation in the segment situated nearest to an inlet end of the catalyst.

11. (Previously Presented) A method according to claim 9, wherein according to the computation model, the catalyst is divided in its longitudinal direction into a multiplicity of segments, and wherein the accumulation maximum value (A_{max}) refers to the maximum permissible reducing substance accumulation under prevailing operating conditions in the segment situated nearest to an inlet end of the catalyst.

12. (Previously Presented) A method according to claim 9, further comprising calculating a limitation factor ($f_{constrain}$), which has a value which depends on an estimate of the current risk that the reducing substance content in the exhaust gases leaving the catalyst might exceed a predetermined limit value, and taking the limitation factor ($f_{constrain}$) into account in calculating the accumulation maximum value (A_{max}) such that the accumulation maximum value (A_{max}) decreases in response to increasing risk that the reducing substance content of the exhaust gases leaving the catalyst might exceed the predetermined limit value.

13. (Previously Presented) A method according to claim 12, further comprising using the limitation factor ($f_{constrain}$) as a multiplication factor in calculating the accumulation maximum value (A_{max}), wherein the limitation factor is given a value which varies between 0 and 1 depending on the current risk that the reducing substance content of the exhaust gases leaving the catalyst might exceed the predetermined limit value, and

wherein the value of the limitation factor is close to 1 when there is no such risk and close to 0 when such risk is imminent.

14. (Previously Presented) A method according to claim 9, wherein

according to the computation model, dividing the catalyst in its longitudinal direction into a multiplicity of segments,

for each of the segments of the computation model, calculating an accumulation value (A_k) and a conversion value ($R_{max,k}$), wherein the accumulation value (A_k) is representative of the maximum permissible reducing substance accumulation in the segment under prevailing operating conditions, and the conversion value ($R_{max,k}$) is representative of the expected conversion of the exhaust gas substance in the segment when the reducing substance accumulation in the segment corresponds to the accumulation value,

summing the conversion values ($R_{max,k}$) for the various segments, and

converting the resulting sum to a fictitious value for the maximum permissible reducing substance accumulation in the segment situated nearest to the inlet end of the catalyst, wherein the fictitious value constitutes said accumulation maximum value (A_{max}).

15. (Previously Presented) A method according to claim 14, further comprising for each of the segments, calculating a limitation factor ($f_{constrain,k}$), which has a value which depends on an estimate of the current risk that the reducing substance content of the exhaust gases leaving the catalyst might exceed a predetermined limit value, and taking the limitation factor ($f_{constrain,k}$) into account in calculating the conversion values ($R_{max,k}$) such that the conversion values ($R_{max,k}$) decrease in response to increasing risk that the reducing substance content of the exhaust gases leaving the catalyst might exceed the predetermined limit value.

16. (Previously Presented) A method according to claim 15, further comprising using the limitation factor ($f_{constrain,k}$) as a multiplication factor in calculating the conversion value ($R_{max,k}$), wherein the limitation factor is given a value which varies

between 0 and 1 depending on the current risk of the reducing substance content of the exhaust gases leaving the catalyst might exceed the predetermined limit value, wherein the value of the limitation factor is close to 1 when there is no such risk and close to 0 when such risk is imminent.

17. (Currently Amended) A method according to claim 14, further comprising

calculating for each of the segments a value (R_k) for the current conversion of the exhaust gas substance in the segment,

calculating a value (R_{tot}) for the total current conversion of the exhaust gas substance in the catalyst ~~(4)~~ is calculated by summation of the values (R_k) of the various segments, and

converting the value (R_{tot}) for the total current conversion of the exhaust gas substance in the catalyst to a fictitious value of the current reducing substance accumulation in the segment situated nearest to an inlet end of the catalyst, wherein the fictitious value constitutes the accumulation actual value (A1).

18. (Currently Amended) A method according to claim 5[[1]], wherein the emission setpoint value (E2) is calculated on the basis of prevailing operating conditions.

19. (Currently Amended) A method according to claim 5[[1]], further comprising using at least the following parameters in the computation model when generating information for the calculation of the accumulation actual value (A1) and the accumulation setpoint value (A2):

exhaust gas temperature (P1) upstream from the catalyst,

concentration (P2) of the exhaust gas substance in the exhaust gases upstream from the catalyst,

exhaust mass flow (P3) through the catalyst, and

an amount (P4) of reducing agent injected.

20. (Currently Amended) A method according to claim 5[[1]], wherein urea or ammonia is used as reducing agent, whereby the reducing substance takes the form of ammonia.

21. (Currently Amended) A method according to claim 5[[1]], wherein the exhaust gas substance takes the form of NOx.

22 - 26. (Canceled)

27. (Currently Amended) A method according to claim 5[[1]], wherein continuously determining the current state of the catalyst includes the accumulation of the reducing substance in different parts of the catalyst and the conversion of exhaust gas substance taking place in different parts of the catalyst.